



MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2007 (AS AMENDED). APPLICATION BY SOUTH TEES DEVELOPMENT CORPORATION FOR SOUTH BANK QUAY – REVIEW OF ENVIRONMENTAL STATEMENT

Reference Number: MLA/2020/00506

C8167B373

From: Cefas, Lowestoft Laboratory
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To: Emanuel Mulenga - MMO (via MCMS)
Cc: Joe Perry, SEAL Case Officer

1. With reference to the above application for review of the Environmental Statement for South Bank Quay by South Tees Development Corporation and your request for comments dated 23rd December 2020, please find my comments below in my capacity as advisor on marine processes.
2. This minute is provided in response to your advisory request in relation to the above proposal in my capacity as scientific and technical advisor for marine processes. The response pertains to those areas of the application request that are of relevance to this field. This minute does not provide specialist advice regarding benthic ecology, fish and fisheries, shellfisheries, or underwater noise as, whilst these are within Cefas' remit, they are outside my area of specialism.
3. In providing this advice I have spent 3.75 hours of the 3.75 hours allocated by the MMO. I have booked my time to C8167B373.

Document (s) reviewed

4. South Bank Quay EIA Report. Royal HaskoningDHV for Tees Valley Combined Authority, November 2020

Description of the proposed works

5. South Tees Development Corporation (STDC) propose to build a new quay at South Bank on the Tees estuary for use predominantly by renewable energy industry, amongst others.
6. The total length of the proposed Quay is 1330m. However, the application presumes that phase 1 will see construction of an initial section 450m long (with 90m buffers at each end for the dredged berth pocket) with one heavy lift area. This *may* be extended by further berth construction in phase 2 as the potential market demands – however, the quay lengths in each phase may vary, and the Environmental Impact Assessment is conducted assuming that the full quay length is constructed in a single phase, as a worst case.
7. Works proposed for phase 1 include:
 - demolition of existing infrastructure including the dilapidated South Bank wharf, 3 downstream jetties (concrete and timber structures), an electrical substation and pipework associated with Tees water abstraction;
 - capital dredging of sand (170,000m³) for the Tees dock turning circle;



- capital dredging of clay and sand for the channel and berth pocket (650,000m³);
 - disposal of dredged material to offshore disposal site Tees Bay C (820,000m³)
 - placement of rocks in layer 2m thick to form the berth pocket (to support jack-up barges during the operations phase).
8. Additional works for phase 2 include:
- capital dredging channel and berth pocket (980,000 m³);
 - disposal of dredged material to Tees Bay C (980,000m³).
9. The new quay walls are set back by 90m from the present location of the channel edge and the application assumes that their construction will take place entirely on land, so is not assessed as part of the marine works. Only 1050m of the full quay length is required for berthing, leaving space at each end for environmental improvement works.

Responses to questions posed by the MMO:

Question 1 To the best of your knowledge is the description of the environment and potential impacts accurate?

Observations

10. Section 6.4 of the Environmental Statement (ES) provides a good baseline environment description. The Tees location is characterised as essentially an artificial channel, bearing little relation to its natural form, and its dredged bathymetry is largely featureless. Marine waves do not propagate upstream to the development site, which is affected by local wind waves only. The tidal flow is dominated by the flood flow at the seabed (surface flows are more strongly influenced by the river outflow), thus the channel naturally infills slowly due to low levels of suspended sediment brought in from the sea. Short term peaks in suspended sediment (during rainfall, or storms) reach 80mg/l, but ambient levels may be as low as 3mg/l in summer. SSC has been reduced by the impact of the upstream Tees barrage, which was intended to allow sediment to pass but which has been shown to have trapped SSC upstream and to have reduced dredging requirements in the downstream sections by up to 24%. This is likely to have detrimentally affected fine-grained sediment transport onto the intertidal marshes and mudflats near the estuary mouth.
11. The description of the expected impacts is adequate -these are discussed in Question 8 of this minute.

Question 2 Has the appropriate evidence base been used? Is the evidence complete for its intended use i.e. is there sufficient information to allow a decision on the application to be made? If not please explain why and what you would expect to see and any additional work.

Observations

12. Baseline description and data are largely compiled from that submitted as part of the Northern Gateway Container Terminal (NGCT) licence application submitted by the same consultant (RHDHV) in 2020 – this in turn is largely based on the NGCT studies carried out in 2006 (and this in turn incorporated data obtained 1989 – 2002; Table 6.6).
13. Table 6.6 suggests several new developments have occurred since this baseline was established, but the applicant states in Section 6.4.2 that the only works completed since this time occurred within the Tees dock and have not affected the baseline at the South Bank quay site. Assuming this to be true, this is likely to be sufficient and the data collection has been expanded with specific modelling works and a short field campaign collecting hydrodynamic and bathymetric data.

14. The modelling works carried out and the results obtained are sufficient to conduct a review of environmental impact and (hence) to allow a decision to be made on the application (allowing for the comments made in the advice minute).

Question 3 Do you agree with the conclusions reached?

Observations

15. Please refer to answers to other questions for specific recommendations.

Question 4 Are the proposed mitigation and monitoring measures sufficient?

Major comments

Observations

16. No mitigation for coastal process impacts is proposed. See my response to Question 11 of this advice minute for further detail.

Question 5 Is the project description clearly presented and consistent throughout the ES?

Minor comments

17. In general, the works are clearly set out. The applications do not make clear the reasons for (and nature of) the separation into phase 1 and phase 2. This is only clarified in Section 3.9 of the ES.

Question 6 Is there an adequate description of the baseline physical and biological environment?

Observations

18. Section 6.4 of ES provides a good baseline description – see Question 1 of this advice minute.

Question 7 Is the EIA methodology and assessment presented clearly and fully justified?

Observations

19. Section 5 provides a basic discussion of the methods, indicating that specific methods may be adopted by different disciplines in separate chapters. In general, the EIA method is as expected.

Minor comments

20. However, I note that it is generally non-quantitative, yet Table 5.3 illustrates a matrix from which impact significance is derived from the combination of sensitivity and magnitude. This table shows a greater number of minor or negligible outcomes relative to more significant categories (i.e., the table is not symmetrical) and so it is not clear how this combination is calculated.
21. The ES indicates that (coastal process) effects and impact assessment is carried out by 'Expert Geomorphological Assessment (EGA)' but does not provide any indication of the guidelines or scales which are applied by the expert to gauge impact.

Question 8 Is there an adequate description of the potential project impacts and effects on the physical and biological environment?

Observations

22. Demolition works are assessed to cause localised disturbance of the bed, of low magnitude and significance for coastal process and water quality.
23. Assessment of the total dredge operations is detailed and mostly presented clearly. Impacts are presented principally as changes in suspended sediment concentration (SSC), the principal significance of which is not coastal process change *pe se*, but changes to water quality (where

the assessment is that this is a minor adverse effect, because temporary) and hence ecology. I defer to ecological advisors for further review of this assessment of SSC impact significance.

24. The full logic of the coastal process assessment is not clear but the total dredge amounts to 2 years' worth of 'normal' dredge volumes for the whole Tees estuary being extracted within 4 months, leading to localised increases in the (normally very low ambient) SSC up to 350mg/l. In coastal process terms, the temporary suspension itself is indeed probably of minor importance, but the associated settling is of potentially greater significance. Figure 6.50 shows the maximum deposition and suggests that this may reach up to 2m increase in bed level. However, almost all redeposition occurs within the dredged area anyway (to be removed again, until the bed level reaches the target depth), and outside this maximum increase may be only 5-30cm. In reality, due to phasing, bed level changes likely to be smaller and over a longer period.
25. Disposal of the dredged material is also assessed in detail, despite proposed disposal to a licensed site. The ES does not discuss the assessment relative to the licensed conditions for disposal. Again, concern is largely focused on the water quality issue of the sediment plume, which is deemed of medium magnitude in terms of turbidity impact (but, as it is short-lived and reversible, as being of minor significance and hence not mitigated). Other water quality impacts are assessed as minor also, including the remobilisation of chemicals within the SSC plumes due to dredging.

Minor comments

26. Disposal assessments do not present the maximum bed thickness change due to the sediment disposal, though this would be the most important coastal process impact. In contrast to all other data presented, deposition at the disposal site is presented for a single disposal event only (Figure 6.65), but the key data required is the maximum total bed level change from the cumulative disposal of the entire dredge load. This should be presented and discussed with respect to the licensed disposal site.
27. The ES appears to make limited specific mention of the rock bed created in the berthing pocket (other than in terms of bed area lost). In view of the potentially large changes in flow velocity (see following comment), should the dynamic consequence of the change in bed substrate also be addressed e.g., does the potentially accelerated deposition due to flow velocity reduction impact the future dredge requirement in this area?

Major comments

28. Flow speeds due to scheme are described as being reduced by 'only' 5-10cm/s, but this is not discussed in terms of actual flow speeds at the site, and it appears that this may be up to 50% reduction? Dredging of the turning circle is also reported as having no hydrodynamic impact, which seems counter-intuitive. The applicant should provide a clear description of the baseline case and indicate the magnitude of the change relative to the present. The dredged pocket and area of affected flows appears to occupy the full width of the channel and therefore may have consequences on both banks, leading to a possible long-lasting change, in turn affected by future climate-induced changes. I am concerned that the applicant has not justified their conclusions of the significance of this specific impact sufficiently.

Question 9 Is there an adequate description of the potential cumulative and inter-related impacts and effects on the physical and biological environment?

Observations

29. A 'standard' discussion of cumulative impact assessment (CIA) is provided i.e., indicating that no legislated CIA method exists, and that pre-existing schemes can be considered part of the baseline) and a broad method is outlined which is in line with most CIA. Though I consider many of the standard methods used for CIA to be inadequate, there is no alternative standard to which the applicant can be held at this time.
30. In particular, I have concerns that cumulative effects are only considered to occur if all proposed dredging works for other facilities within the Tees coincide – it is my view that, if they do not coincide, then there is still the prospect of very large volumes of dredging occurring in sequence, with the stated consequence of an increase in maintenance dredging in future i.e., the cumulative impact is a prolonged period of considerably activity.
31. The modelling described suggests that the separate developments considered have impacts on flow and sedimentation, but it is not clear that these have been modelled together, or simply as separate developments and their independent impacts described in turn.
32. In view of this, I recommend that the MMO take further advice from ecological and fisheries expertise who may indicate specific concerns with the volume and timing of the works which could require further clarification from the developer.

Question 10 Is there an adequate description of the potential transboundary impacts and effects on the physical and biological environment?

Observations

33. Not applicable.

Question 11 Are measures to avoid, reduce or remedy significant adverse effects clearly presented and appropriately justified?

Observations

34. Embedded mitigation is discussed in Section 3.12 but considers only spills, leaks, pollution and invasive non-native species e.g., Japanese Knotweed and Japanese Rose, which are not relevant to coastal process impacts. This section also discusses the potential use of dredge material as construction fill (for other projects) and /or construction of environmental enhancement bird islands, but there are no concrete plans in this regard and the measures are not used in the EIA itself.
35. No secondary mitigation measures are proposed for coastal process impacts.

Minor comments

36. The applicant should be encouraged at the licensing stage to maximise their efforts to find beneficial reuse outlets for the substantial quantities of dredged material generated in line with waste minimisation principles.
37. Mitigation for the possible remobilising of groundwater contaminants due to construction and riverbank excavation (Section 7.5.5) is stated to be required if contaminants are identified, but the method is not specified. They are assumed to be effective, as the mitigation is used to assign minor significance to this impact. The applicant should indicate the general form of mitigation proposed.

Question 12 Are monitoring proposals and recommendations clearly presented and appropriately justified?

Observations

38. No monitoring of coastal process impacts is proposed.

Question 13 In collecting data have details of any quality standards or assurance methods been given? If not please explain what you would expect to see and if they have, please explain if such standards and methods are suitable.

Observations

39. New site data was collected in a brief metocean survey conducted over 2 days in July 2020. These data were collected using standard methods and appear to be of good quality and suggest no reason for concern, although details of the methods and processing are understandably not provided as part of the EIA.

Question 14 Please assess the methodology used to prepare and gather evidence. Have they used standard practices?

Observations

40. Standard methods of data collection – reuse of historical data, environmental assessments for previous schemes, new data generated by site surveys and modelling – have been used.

Question 15 Is the timeliness of the data appropriate for the intended use?

Observations

41. As noted for Question 2 of this minute, sources used to assemble the baseline may be quite old (and in particular, the assessment of future trends based on historical trend analysis published in 2000 may be invalidated by the continual development and management dredging conducted since). However, the Tees has been noted to be a largely artificial environment maintained in an industrial function and so I have no particular concern about the validity of the baseline data. Recent site data and modelling results used for this application are sufficiently up to date.

Question 16 Is the evidence that has been supplied appropriate (i.e. proportionate and targeted) for its intended use?

Observations

42. I believe the evidence gathered is appropriate, notwithstanding some potential gaps in presentation (see Question 8 of this minute).

Question 17 Is the evidence consistent with that submitted for operations of a similar nature?

Observations

43. Yes, being largely based on such similar applications.

Question 18 For evidence that relies on modelled data has an unbiased statistical accuracy assessment been carried out?

Observations

44. The application describes the use of 2D and 3D MIKE models of the estuary for hydrodynamics with calibration and verification based on recent survey data. Though I am not familiar with the use of this specific model it is well known and widely used and there is no obvious reason to question the modelling work carried out.

Question 19 Are there any minor technical or presentational comments that affect the overall confidence in the conclusions? Please insert as an annex.

45. The applicant has effectively made no allowance for any changes in flow and water levels due to climate change, despite the standard EIA methods indicating that this should be done. The logic for simply assessing impacts against present day baseline is not clearly set out in the ES and apparently hinges on the statement that “the relative effect of the proposed scheme upon the baseline hydrodynamic and sedimentary regime will be constant throughout such changes.” I am unable to decipher this statement, Further, if impacts from any scheme can simply be considered to change in relative proportion to the changes due to the climate, no scheme need ever assess any climate-induced changes – but since this is not current practice, the standard position is that the magnitude and relative significance of impacts may change as a result of climate-induced environmental change, hence the requirement within EIA legislation to take such changes into account.
46. The text surrounding Table 5.1 is inadequate to explain the confounding of the concepts of ‘value’ and ‘sensitivity’ in the Table (and the assessment). Thus “*Value is defined as the measure of a receptor’s importance; this forms part of the definition of sensitivity*” is clearly immediately contradicting the preceding statement that “*The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected*”. This linguistic inconsistency provides no justification for their combination.
47. In Section 7.4.1 Sediment Quality, (p144) the application states that concentrations of PDBE209 range up to 407ppb. It is noted that there are no present OSPAR assessment values developed with which to assess status, and that (probably as there were no pre-existing regulatory limits applicable) no concerns were raised by the MMO with regard to PDBE concentrations for disposal to Tees Bay C site. However, as an acknowledged Chemical for Priority Action, the development of action levels (AL) for this pollutant is ongoing and, due to its toxicity, AL2 for PDBE209 is likely to be around a tenth of the peak concentrations measured. The wording of this paragraph suggests that the applicant is aware of a potential water quality problem due to this contaminant and the MMO should be aware that previous advice may not be valid (particularly if phase 2 of the development is delayed).
48. Figure 6.60 is at too low a resolution to be useful.

Summary

49. The applicant has generally concluded that there are no significant coastal process impacts likely due to the proposed scheme. Overall, I concur, since the works are taking place in what is a heavily-modified and largely non-natural environment. The coastal process impacts which do occur are largely contained within this artificial channel undergoing continual maintenance dredging. Since the baseline coastal processes are shaped almost entirely by the same processes required of these works, the additional impact is minimal.
50. However, I do recognise that the volume of sediment to be extracted is (in total) very large for such a small channel and that long-term hydrodynamic impacts may be quite noticeable in the area affected. The works do also require a small area of additional land loss (setting back the quay) and will increase the already considerable industrialisation of the Tees estuary. Therefore, I would recommend that the assessment of the significance of the flow changes be made more quantitative (particularly with respect to the northern bank) and the morphological consequences assessed in more detail to justify the conclusion.

Steve Wallbridge
Marine Process advisor

<i>Quality Check</i>	<i>Date</i>
Joe Perry	08/02/2021